a final appliance having a geometry selected to progressively reposition the teeth from the last intermediate arrangement to the final tooth arrangement, wherein at least some of the appliances are marked to indicate their order of use.

2. (As filed) A system as in claim 1, wherein the appliances comprise polymeric shells having cavities shaped to receive and resiliently reposition teeth from one arrangement to a successive arrangement.

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3. (As filed) A system as in claim 2, wherein the tooth positions defined by the cavities in each successive appliance differ from those defined by the prior appliance by no more than 2 mm.

4. (As filed) A system as in claim 1, comprising at least two intermediate appliances.

5. (As filed) A system as in claim 4, comprising at least ten intermediate appliances.

6. (As filed) A system as in claim 5, comprising at least twenty-five intermediate appliances.

11 7. (Amended) A method for repositioning teeth from an initial tooth arrangement to a final tooth arrangement, said method comprising:

placing a first incremental position adjustment appliance in a patient's mouth, wherein the first appliance has a geometry selected to reposition the teeth from the initial tooth arrangement to a first intermediate arrangement;

successively replacing one or more additional appliances, wherein the additional appliances have geometries selected to progressively reposition the teeth from the first intermediate arrangement to successive intermediate arrangements; and

placing a final appliance into the patient's mouth, wherein the final appliance has a geometry selected to progressively reposition the teeth from the last intermediate arrangement to the final tooth arrangement, wherein at least some of the appliances are marked to indicate their order of use.

12 8. (As filed) A method as in claim 11, wherein the appliances comprise polymeric shells having cavities shaped to receive and resiliently reposition teeth from one arrangement to a successive arrangement.

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9. (As filed) A method as in claim 8, where the tooth positions defined by the cavities in each successive appliance differ from those defined by the prior appliance by no more than 2 mm.

10. (As filed) A method as in claim 7, wherein the successively placing step comprises placing at least two additional appliances prior to placing the final appliance.

11. (As filed) A method as in claim 10, wherein the successively placing step comprises placing at least ten additional appliances.

12. (As filed) A method as in claim 11, wherein the successively placing step comprises placing at least twenty-five additional appliances.

13. (As filed) A method as in claim 7, wherein the appliances are successively replaced at an interval in the range from 2 days to 20 days.

Please cancel claims 14-21.

22. (Amended) A method for producing a plurality of digital data sets representing a series of discrete tooth arrangements progressing from an initial to a final arrangement, said method comprising:

providing a computer system having at least once processor and memory;

providing to the computer system an initial digital data set representing an initial tooth arrangement;

providing to the computer system a final digital data set representing a final tooth arrangement;

producing a plurality of successive digital data sets based on both of the provided initial and final digital data sets, wherein said plurality of digital data sets represent a series of successive tooth arrangements progressing from the initial tooth arrangement to the final tooth arrangement; and

annotating the data sets to add text or numbering.

23. (As filed) A method as in claim 22, wherein the step of providing a digital data set representing an initial tooth arrangement comprises scanning a three-dimensional model of a patient's teeth.

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24. (Amended) A method as in claim 22, wherein the step of providing a digital data set representing a final tooth arrangement comprises:

defining boundaries about at least some of the individual teeth on a visual image provided by the computer system; and

moving at least some of the tooth boundaries relative to the other teeth in the visual image to produce the final data set.

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25. (As filed) A method as in claim 22, wherein the step of producing a plurality of successive digital data sets comprises determining positional differences between the initial data set and the final data set and interpolating said differences.

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26. (As filed) A method as in claim 25, wherein the interpolating step comprises linear interpolation.

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27. (As filed) A method as in claim 25, wherein the interpolating step comprises non-linear interpolation.

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28. (As filed) A method as in claim 25, further comprising defining one or more key frames between the initial tooth arrangement and final tooth arrangement and interpolating between the key frames.

29. (Amended) A method for fabricating a plurality of dental incremental position adjustment appliances, said method comprising:

providing an initial digital data set representing an initial tooth arrangement;

providing a final digital data set representing a final tooth arrangement;

producing a plurality of successive digital data sets based on both of the initial and final digital data sets, wherein said plurality of digital data sets represent a series of

successive tooth arrangements progressing from the initial tooth arrangement to the final tooth arrangement;

annotating the data sets to add text or numbering;

fabricating appliances based on at least some of the produced digital data sets, wherein the text or numbering appears on the appliances.

30. (As filed) A method as in claim 29, wherein the step of providing a digital data set representing an initial tooth arrangement comprises scanning a three-dimensional model of a patient's teeth.

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31. (As filed) A method as in claim 29, wherein the step of providing a digital data set representing a final tooth arrangement comprises:

defining boundaries about at least some of the individual teeth; and

moving at least some of the tooth boundaries relative to the other teeth in an image based on the digital data set to produce the final data set.

32. (As filed) A method as in claim 29, wherein the step of producing a plurality of successive digital data sets comprises determining positional differences between the initial data set and the final data set and interpolating said differences.

33. (As filed) A method as in claim 32, wherein the interpolating step comprises linear interpolation.

34. (As filed) A method as in claim 32, wherein the interpolating step comprises non-linear interpolation.

35. (As filed) A method as in claim 32, further comprising defining one or more key frames between the initial tooth arrangement and final tooth arrangement and interpolating between the key frames.

36. (As filed) A method as in claim 29, wherein the fabricating step comprises:

controlling a fabrication machine based on the successive digital data sets to produce successive positive models of the successive tooth arrangements; and

producing the dental appliance as a negative of the positive model.

37. (As filed) A method as in claim 36, wherein the controlling step comprises:

providing a volume of non-hardened polymeric resin; and

scanning a laser to selectively harden the resin in a shape based on the digital data set to produce the positive model.

38. (As filed) A method as in claim 36, wherein the producing step comprises modeling the appliance over the positive model.

41 ~~39.~~ (Amended) A method for fabricating a dental appliance, said method comprising:

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providing a digital data set representing a modified tooth arrangement for a patient, said data set including text or numbering;

controlling a fabrication machine based on the digital data set to produce a positive model of the modified tooth arrangement, wherein the text or numbering appears on the positive model; and

producing the dental appliance as a negative of the positive model, wherein the text or numbering appears on the dental appliance.

43 40. (As filed) A method as in claim 41 39, wherein the controlling step comprises:

providing a volume of non-hardened polymeric resin;

scanning a laser to selectively harden the resin in a shape based on the digital data set to produce the positive model.

43 41. (As filed) A method as in claim 41 39, wherein the producing step comprises molding the appliance over the positive model.

45 42. (Amended) A method for fabricating a dental appliance, said method comprising:

providing a first digital data set representing a modified tooth arrangement for a patient;

producing a second digital data set from the first data set, wherein the second data set represents a negative model of the modified tooth arrangement; and

controlling a fabrication machine based on the second digital data set to produce the dental appliance, wherein the appliance is marked with text or data.

46 43. (As filed) A method as in claim 45 42, wherein the controlling step comprises selectively hardening a non-hardened resin to produce the appliance and separating the appliance from the remaining liquid resin.

47 44. (As filed) A method as in claim 45 42, wherein the appliance comprises a polymeric shell having a cavity shaped to receive and resiliently reposition teeth from an initial tooth arrangement to the modified tooth arrangement.

Please add claims 45-79.

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7 45. (New) A system as in claim 1, wherein the appliances are marked with sequential numbering directly on the appliances.

8 46. (New) A system as in claim 1, wherein the appliances are marked on tags which are affixed to the appliances.

9 47. (New) A system as in claim 1, wherein the appliances are marked by placement in a pouch.

10 48. (New) A system as in claim 1, further comprising instructions which set forth that the patient is to wear the individual appliances in the order marked on the appliance.

18 49. (New) A method as in claim 11, wherein the appliances are marked with sequential numbering directly on the appliances.

19 50. (New) A method as in claim 11, wherein the appliances are marked on tags which are affixed to the appliances.

20 51. (New) A method as in claim 11, wherein the appliances are marked by placement in a pouch.

28 52. (New) A method as in claim 21, wherein annotating comprises adding a sequence number to the data set.

39 53. (New) A method as in claim 29, wherein annotating comprises adding a sequence number to the data set.

40 54. (New) A method as in claim 39, wherein the numbers appearing on the final appliance indicate the appliance's order of use.

44 55. (New) A method as in claim 41, wherein a plurality of dental appliances are fabricated and wherein the text or numbering indicates an order of use.

48 56. (New) A method as in claim 45, wherein a plurality of dental appliances are fabricated and wherein the text or numbering indicates an order of use.

49 57. (New) A method for fabricating a plurality of dental incremental position adjustment appliances, said method comprising:

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providing digital data representing a plurality of successive tooth arrangements progressing from an initial tooth arrangement to a final tooth arrangement, said data including text or numbering; and

controlling a fabrication machine based on the digital data to produce the appliances, wherein the text or numbering appears on the appliance.

58. (New) A method as in claim 57, wherein providing the digital data comprises providing a plurality of digital data sets, wherein each set represents one of the successive tooth arrangements, and wherein the text or numbering indicates an order of use.

59. (New) A method as in claim 58, wherein the fabrication machine is controlled to produce polymeric shell appliances.

60. (New) A method as in claim 57, wherein controlling the fabrication machine comprises:

providing a volume of non-hardened polymeric resin; and

selectively hardening the resin in a shape corresponding to each of the appliances.

61. (New) A method as in claim 60, wherein selectively hardening comprises scanning a laser to selectively cross-link the resin.

62. (New) A method as in claim 60, wherein controlling the fabrication machine comprises:

providing a volume of non-hardened polymeric resin; and

selectively hardening the resin in a shape corresponding to each of the appliances.

63. (New) A method as in claim 62, wherein hardening comprises scanning a laser to selectively cross-link the resin.

64. (New) A method as in claim 60, wherein scanning produces an appliance comprising a thin polymeric shell.

65. (New) A method as in claim 62, wherein scanning produces an appliance comprising a thin polymeric shell.

66. (New) A method of fabricating a plurality of dental incremental position adjustment appliances, said method comprising:

providing a plurality of positive models of successive tooth arrangements, wherein each successive arrangement represents a stage progressing from an initial tooth arrangement to an intermediate or a final tooth arrangement and wherein said models have printed annotations; and

fabricating the plurality of dental appliances as negatives of the positive models, wherein the annotations appear on the dental appliances.

67. (New) A method as in claim 66, wherein the annotations comprise sequential numbering indicating an order of use.

68. (New) A method as in claim 67, wherein providing said positive models comprises:

providing digital data representing said plurality of successive tooth arrangements; and

controlling a fabrication machine to produce said plurality of positive models of successive tooth arrangements.

69. (New) A method as in claim 68, wherein providing digital data comprises producing a plurality of digital data sets, wherein each set represents one of the successive tooth arrangements.

70. (New) A method as in claim 68, wherein controlling the fabrication machine comprises:

providing a volume of non-hardened polymeric resin; and

scanning a laser to selectively harden the resin in a shape corresponding to each of the positive models.

71. (New) A method as in claim 69, wherein controlling the fabrication machine comprises:

providing a volume of non-hardened polymeric resin; and

scanning a laser to selectively harden the resin in a shape corresponding to each of the positive models.

72. (New) A method as in claim 66, wherein producing the dental appliances comprises molding a thin polymeric sheet over each of the positive models to produce a plurality of thin polymeric shells.

73. (New) A method of fabricating one or more dental incremental position adjustment appliances, comprising:

providing a computer generated positive model of at least one tooth arrangement selected from an initial tooth arrangement, an intermediate tooth arrangement, and final tooth arrangement, wherein said models have printed annotations; and

fabricating at least one dental appliance as a negative of the computer generated positive model, wherein the annotations appear on the dental appliances.

74. (New) A method as in claim 73, wherein the annotations comprise sequential numbering indicating an order of use.

75. (New) A method as in claim 73, wherein providing said at least one positive model comprises:

providing digital data representing at least one tooth arrangement; and

controlling a fabrication machine to produce said at least one positive model of a tooth arrangement.

76. (New). A method as in claim 75, wherein providing digital data comprises producing a plurality of digital data sets, wherein each set represents one of a plurality of successive tooth arrangements.

77. (New) A method as in claim 75, wherein controlling the fabrication machine comprises:

providing a volume of non-hardened polymeric resin; and

scanning a laser to selectively harden the resin in a shape corresponding to each of the positive models.

78. (New) A method as in claim 76, wherein controlling the fabrication machine comprises:

providing a volume of non-hardened polymeric resin; and

scanning a laser to selectively harden the resin in a shape corresponding to each of the positive models.

79. (New) A method as in claim 73, wherein fabricating the at least one dental appliance comprises molding a thin polymeric sheet over said at least one positive model to produce at least one thin polymeric shells. --